tory rate, blood pressure, blood sugar (with or without an appropriate subcutaneous probe), oxygen saturation, minute ventilation, and so on; physical states, such as movement, sleep, footsteps, and the like; and performance, including calories burned or estimated blood glucose level. Frequently, wearable and implantable physiology monitors and activity sensors **152** are capable of wirelessly interfacing with mobile devices **153**, particularly smart mobile devices, including so-called "smartphones" and "smart watches," as well as with personal computers and tablet or handheld computers, to download monitoring data either in real-time or in batches through an application ("App") or similar program.

Based on the ECG data **166**, physicians can rely on the data as medically certifiable and are able to directly proceed with diagnosing cardiac rhythm disorders and determining the appropriate course of treatment for the patient **141**, including undertaking further medical interventions as appropriate. The ECG data **166** can be retrieved by a digital computer **150** over the network **155**. A diagnostic composite plot **151** that includes multiple temporal points of reference and a plot of R-R interval data is then constructed based on the ECG data **166**, as discussed in detail supra with reference to FIG. **3**, and displayed or, alternatively, printed, for use by a physician.

In a further embodiment, the server **159** executes a patient diagnosis program **161** ("Dx") or similar application that can evaluate the ECG data **166** to form a diagnosis of a cardiac rhythm disorder. The patient diagnosis program **161** compares and evaluates the ECG data **166** to a set of medical diagnostic criteria **167**, from which a diagnostic overread **162** ("diagnosis") is generated. Each diagnostic overread **162** can include one or more diagnostic findings **168** that can be rated by degree of severity, such as with the automated diagnosis of atrial fibrillation. If at least one of the diagnostic findings **168** for a patient exceed a threshold level of tolerance, which may be tailored to a specific client, disease or medical condition group, or applied to a general patient population, in a still further embodiment, therapeutic treatment ("Therapy") to address diagnosed disorder findings can be generated and, optionally, programmed into a cardiac rhythm therapy delivery device, such as an IMD (not shown), including a pacemaker, implantable cardioverter defibrillator (ICD), or similar devices.

While the invention has been particularly shown and described as referenced to the embodiments thereof, those skilled in the art will understand that the foregoing and other changes in form and detail may be made therein without departing from the spirit and scope.

What is claimed is:

1. A system for facilitating diagnosis of cardiac rhythm disorders with the aid of a digital computer, comprising:

an electrocardiogram (ECG) monitoring and recording device;

a download station adapted to retrieve cutaneous action potentials recorded for a set time period by the ECG monitoring and recording device as ECG data;

a processor and memory within which code for execution by the processor is stored, further comprising:

an identification module configured to identify a plurality of R-wave peaks in the ECG data;

a calculation module configured to calculate a difference between recording times of successive pairs of the R-wave peaks and to determine a heart rate associated with each time difference; and

a construction module configured to form an extended duration R-R interval plot over the set time period comprising each of the recording time differences and the associated heart rates; and

a display operatively coupled to the processor, for displaying:

the extended duration R-R interval plot with a temporal point of reference in the extended duration R-R interval plot; and

at least one accompanying ECG plot comprising at least part of the ECG data preceding and following the temporal point of reference as context.

2. A system in accordance with claim **1**, further comprising at least one of:

the at least one accompanying ECG plot adapted to be presented as a ECG view produced at a traditional paper-based ECG recording speed; and

the at least one accompanying ECG plot adapted to be presented as a lower resolution, pre- and post-event contextual view relative to the temporal point of reference.

3. A system in accordance with claim **1**, further comprising at least one of:

the construction module further configured to limit the heart rates to a range outside of which the time differences and the associated heart rates are excluded from the extended duration R-R interval plot; and

the construction module further configured to construct the extended duration R-R interval plot with a non-linear scale for the heart rates.

4. A system in accordance with claim **3**, wherein the non-linear scale for the heart rates is determined in accordance with the equation:

$$y = \left(\frac{x - \min bpm}{\max bpm - \min bpm}\right)^n$$

where x is the time difference, min bpm is the minimum heart rate (in beats per minute), max bpm is the maximum heart rate, and $n<1$.

5. A system in accordance with claim **1**, further comprising:

an ambulatory ECG monitor disposed for wear on the patient's chest along the sternum and adapted to record the cutaneous action potentials, the ambulatory ECG monitor adapted to be interfaced to a pair of cutaneous electrodes adhered to the patient's skin along the sternal midline.

6. A system in accordance with claim **1**, the processor further comprising:

an identification module configured to identify a potentially-actionable cardiac event within the ECG data, and to select the plurality of R-wave peaks from the ECG data prior to and after the potentially-actionable cardiac event.

7. A system in accordance with claim **1**, the processor further comprising:

a diagnostic module configured to form a diagnosis based on heart rate variability patterns in the extended duration R-R interval plot.

8. A system in accordance with claim **7**, further comprising:

the diagnostic module further configured to detect atrial fibrillation by identifying a Gaussian-type distribution of heart rate variability in the extended duration R-R interval plot.

9. A system in accordance with claim **7**, further comprising:

a cardiac rhythm therapy delivery device programmed to deliver a therapy in response to the diagnosis.